

# EVALUATION OF GAME FISH STOCKINGS IN A PORTION OF THE WEST FORK OF WHITE RIVER

2001 Final Fish Management Report

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INTRODUCTION

A heavy rain in the early fall of 1994 forced combined sewers to overflow and caused the Belmont Wastewater Treatment Plant (BWWTP) to discharge untreated and partially treated sewage into an impounded portion of the West Fork of White River in Marion County. The river, which was extremely low at the time, could not adequately dilute the sewage. This resulted in low dissolved oxygen which triggered a major fish kill in a 1.7 mile reach of river that eliminated an estimated one-half million fish. Most of the fish killed were gizzard shad, however, considerable numbers of largemouth bass, smallmouth bass, channel catfish, and flathead catfish also died. Within two weeks of the first fish kill, another toxic discharge from the same sources eliminated an estimated 3,000 fish, nearly all of which were shad. Since few fish were killed during the second release, the first discharge probably eliminated nearly all fish in the 1.7 mile reach and the second event killed the few fish that had migrated back into the area.

To restore a desirable sport fishery in the area of the fish kill, an aggressive fish stocking program was undertaken by the Division of Fish and Wildlife (DFW). Shortly after the fish kills, 6,000 smallmouth bass fingerlings were stocked near BWWTP (Table 1). The original goal of a five year stocking program which began in 1996 and ended in the fall of 2000 was to annually stock 5,200 each of largemouth bass, smallmouth bass, and channel catfish, and any flathead catfish available. Smallmouth stockings were discontinued following the 1997 release since it was felt that there was a lack of preferred habitat in the area. Smallmouth prefer free-flowing river reaches rather than silt laden impounded river segments. Largemouth bass were not available from DFW to be stocked near BWWTP in the fall of 2000 because many of the largemouth produced were stocked in other portions of the West Fork of White River following a catastrophic fish kill that occurred in the winter of 1999-2000 which affected approximately 55 miles of river. In all, the fish stockings from 1994 to 2000 near BWWTP included 25,095 channel catfish that averaged 8.8 inches long, 21,980 largemouth bass averaging 3.7 inches, 16,400 smallmouth bass which averaged 2.9 inches, and twelve adult flathead catfish.

Evaluations of the recovery of the game fish populations and the entire fish community began in 1996 and continued through 2001. Fall sampling focusing strictly on bass and catfish was conducted for six consecutive years. The entire fish community was evaluated by DFW in 1998 and 2001. While DFW had not conducted any surveys near BWWTP prior to the fish kills,

Table 1. Fish stocking history for the Stout pool on the West Fork of White River from 1994 through 2000.

<u>Year</u>	<u>Species</u>	<u>Number Stocked</u>	<u>Average Size</u>
1994	Smallmouth bass	6,000	2.9 in.
1996	Smallmouth bass	5,200	2.8 in.
	Largemouth bass	5,589	3.0 in.
	Channel catfish	4,294	9.0 in.
1997	Smallmouth bass	5,200	2.9 in.
	Largemouth bass	5,500	3.1 in.
	Channel catfish	5,200	8.5 in.
1998	Largemouth bass	5,639	4.2 in.
	Channel catfish	5,201	9.7 in.
	Flathead catfish	12	19 lbs
1999	Largemouth bass	5,252	4.4 in.
	Channel catfish	5,200	8.4 in.
2000	Channel catfish	5,200	8.3 in.

a private consulting firm, EA Engineering, Science, and Technology, conducted sampling four times a year from 1992 to 1995 to determine the effects of the heated water discharge from the E.W. Stout Generating Station on the fish community (1995).

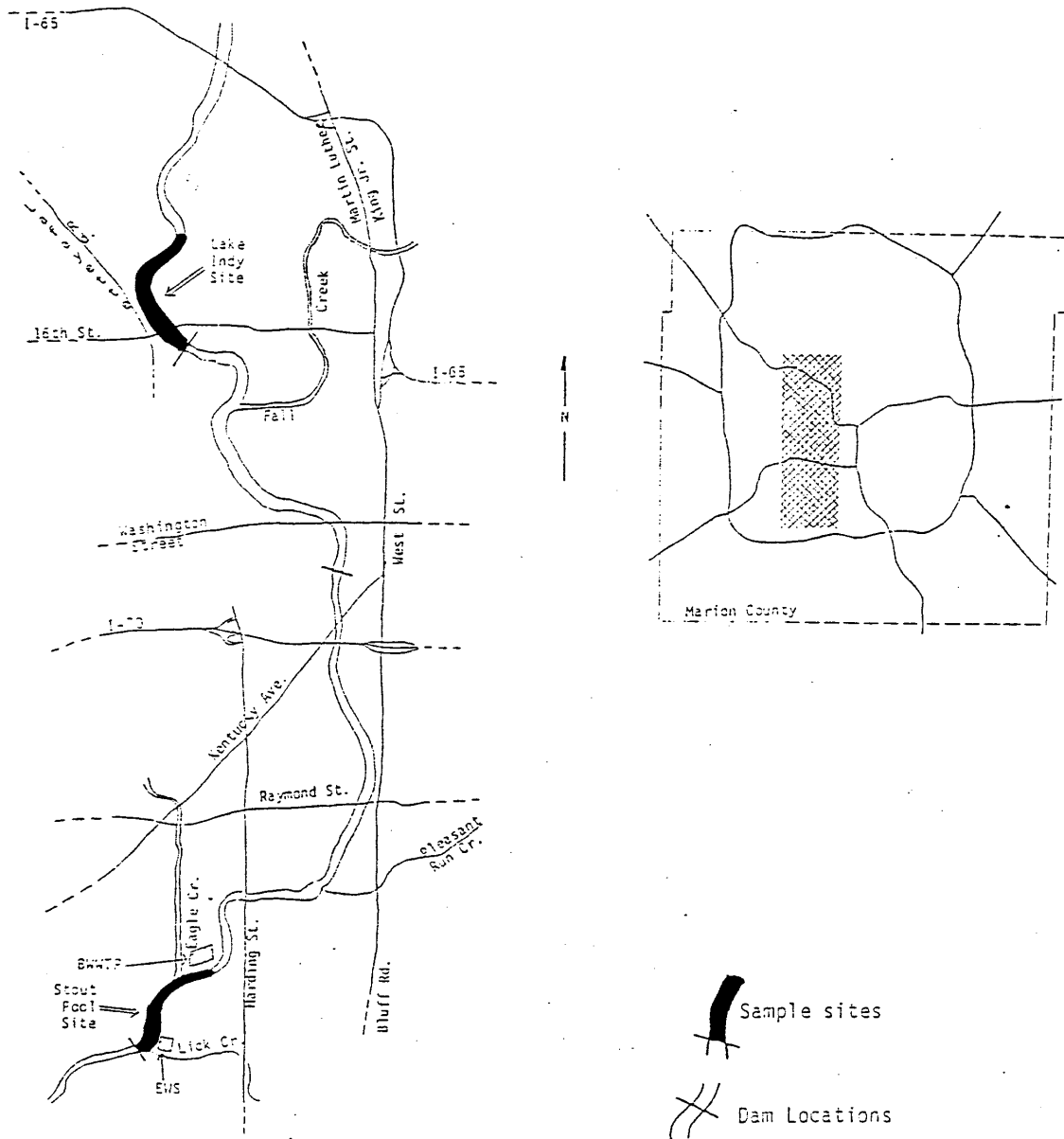
## METHODS AND PROCEDURES

The Stout pool station is a 0.8 mile reach of White River between the final effluent outfall of BWWTP and the dam at E.W. Stout Generating Station (Figure 1). A control station that is located upstream of the Stout pool was also sampled annually to assist in evaluating the recovery of the Stout pool fishery. The control station is also an impounded reach of river, known locally as Lake Indy, which is located immediately upstream of the 16<sup>th</sup> Street dam. This 1.0 mile station has habitat very similar to the Stout pool.

## FISH COMMUNITY SURVEY

Assessments of the fish communities at the two reaches were conducted in the summer of 1998 and again July 15 to 18, 2001. Sampling effort consisted of 1 hour of D.C. electrofishing at night and four experimental mesh gill net lifts at each station each year. All fish were collected, identified, and measured to the nearest 0.1 inch. Scale samples were collected from the black bass (largemouth, smallmouth, and spotted bass) and rock bass for age and

Figure 1. West Fork of White River Sample Sites.



growth determination. Gill nets were utilized in an effort to sample primarily the catfish populations since catfish are usually not effectively sampled with electrofishing gear.

#### FALL GAME FISH SAMPLING

Game fish only sampling was conducted each year at the end of September to early October. Data is most comparable when sampling is conducted at nearly the same time each year. In any one fall sample, surveys at the two reaches were conducted from one to three days apart to reduce any sampling bias related to weather or river conditions. Sampling consisted of 1 hour of D.C. electrofishing during the day at each station. The 2001 fall surveys were conducted on October 1 at Lake Indy and October 4 at the Stout pool. Only black bass and catfish were collected.

### RESULTS AND DISCUSSION

#### FISH COMMUNITY SURVEY

A total of 280 fish representing 27 species and hybrid sunfish was collected from the Stout pool during the fish community survey in 2001 (Table 2). In 1998, only 20 species were collected (Keller 1999). The most abundant species collected in the present survey were longear sunfish (32.1%), bluegill (11.1%), channel catfish (8.2%), white sucker (6.1%), and common carp (5.0%). Gizzard shad abundance is down considerably from 1998 when they comprised 21.6% of the sample by number compared to 2.5% in 2001. The devastating 1999-2000 White River fish kill primarily affected the fish community from Lake Indy upstream to Anderson, however, some mortality of shad was observed in the Stout pool.

Twenty-three channel catfish were collected from the Stout station that ranged in length from 9.1 to 27.6 inches and averaged 19.0 inches (Table 3). There is a fairly even size distribution of channel catfish which indicates either stocking success or successful natural reproduction. Only six largemouth bass, four smallmouth bass, and one spotted bass were collected at Stout. Largemouth ranged from 2.3 to 17.1 inches long (Table 4). Smallmouth were found from 5.5 to 9.4 inches.

Three hundred and forty-nine fish were collected from Lake Indy. Twenty-three species were represented in the sample. Longear sunfish was the most abundant species collected (21.8%), followed by bluegill (11.7%), quillback (10.0%), gizzard shad (8.3%), largemouth bass (7.4%), and golden shiner (6.9%). Species composition and abundance were fairly similar for the 1998 and 2001 samples at Lake Indy with the exception of the considerable drop in abundance of the group of fish known as round-bodied suckers (mainly redhorse species and spotted sucker). In 1998, round-bodied suckers comprised 28.4% of the sample by number

Table 2. Species composition of fish collected with electrofishing gear (EF) and gill nets (GN) from the Stout pool and Lake Indy in July of 2001.

Species	Scientific Name	Stout Pool			Lake Indy		
		EF	GN	Length Range (in.)	EF	GN	Length Range (in.)
Gizzard shad	<i>Dorosoma cepedianum</i>	4	3	8.1-10.8	14	15	2.1-14.8
Goldfish	<i>Carassius auratus</i>	10	1	10.6-13.7			
Spotfin shiner	<i>Cyprinella spiloptera</i>	5		1.9-4.0	8		2.6-3.8
Common carp	<i>Cyprinus carpio</i>	8	6	16.4-23.9	11	1	15.1-24.4
Golden shiner	<i>Notemigonus crysoleucas</i>	3	1	2.3-7.0	2	22	4.4-7.1
Silver shiner	<i>Notropis photogenis</i>	1		4.6	1		4.0
Bluntnose minnow	<i>Pimephales notatus</i>	1		2.6	5		2.3-3.0
River carpsucker	<i>Carpiodes carpio</i>	6	3	13.8-19.5		9	10.0-15.7
Quillback	<i>Carpiodes cyprinus</i>	1	11	13.3-18.9	4	31	12.1-16.8
White sucker	<i>Catostomus commersoni</i>	6	11	8.0-16.5			
Spotted sucker	<i>Minytrema melanops</i>	10	1	8.6-16.4	2	12	6.8-12.2
Silver redhorse	<i>Moxostoma anisurum</i>	1		24.9		5	15.1-16.6
Black redhorse	<i>Moxostoma duquesnei</i>	1		16.4			
Golden redhorse	<i>Moxostoma erythrurum</i>	4	6	7.0-17.0	3	3	13.5-16.3
Shorthead redhorse	<i>Moxostoma macrolepidotum</i>		1	17.2			
Yellow bullhead	<i>Ameiurus natalis</i>	1		9.4			
Channel catfish	<i>Ictalurus punctatus</i>	1	22	9.1-27.6	4	9	9.9-24.2
Flathead catfish	<i>Pylodictis olivaris</i>				8	2	10.2-34.0
Brook silverside	<i>Labidesthes sicculus</i>				2		1.8-3.1
Yellow bass	<i>Morone mississippiensis</i>	1		8.1	3	14	6.3-9.4
Rock bass	<i>Ambloplites rupestris</i>					8	3.9-8.8
Green sunfish	<i>Lepomis cyanellus</i>	1		5.5	1		3.1
Pumpkinseed	<i>Lepomis gibbosus</i>	1		4.1			
Orangespotted sunfish	<i>Lepomis humilis</i>				1		2.8
Bluegill	<i>Lepomis macrochirus</i>	31		3.2-6.9	41		2.5-6.7
Longear sunfish	<i>Lepomis megalotis</i>	99		2.7-5.5	75	1	2.3-5.0
Smallmouth bass	<i>Micropterus dolomieu</i>	4		5.5-9.4	2		4.8-8.9
Spotted bass	<i>Micropterus punctulatus</i>	1		5.4			
Largemouth bass	<i>Micropterus salmoides</i>	6		2.3-17.1	25	1	2.5-14.6
White crappie	<i>Pomoxis annularis</i>				1	3	8.1-8.7
Hybrid sunfish		2		4.0-5.6			
Logperch	<i>Percina caprodes</i>	2		5.4-5.7			
Freshwater drum	<i>Aplodinotus grunniens</i>	2	1	11.8-15.3			
TOTAL		213	67		213	136	

Table 3. Length frequency of channel catfish collected from the Stout pool and Lake Indy in the summer and fall of 2001.

<u>Length (in.)</u>	<u>Stout Pool</u>		<u>Lake Indy</u>	
	<u>Summer</u>	<u>Fall</u>	<u>Summer</u>	<u>Fall</u>
9.0	1			
9.5				
10.0			1	
10.5	1			
11.0			1	
11.5			1	
12.0	1			
12.5				
13.0	1			
13.5			2	
14.0				
14.5				
15.0	1		2	
15.5				
16.0	1			
16.5	1		1	
17.0	1		1	
17.5	2			
18.0				
18.5				
19.0	1			
19.5	1		1	
20.0	1			
20.5	1			
21.0			1	
21.5	2	1		
22.0				
22.5	1			
23.0	1		1	
23.5	1			
24.0			1	
24.5				
25.0	2			1
25.5	1			
26.0				
26.5				
27.0				
27.5	1			
TOTAL	23	1	13	1

Table 4. Length frequency and age of largemouth bass collected from the Stout pool and Lake Indy in the summer and fall of 2001.

<u>Length (in.)</u>	<u>Stout Pool</u>		<u>Lake Indy</u>		<u>Age</u>	
	<u>Summer</u>	<u>Fall</u>	<u>Summer</u>	<u>Fall</u>	<u>Summer</u> YOY	<u>Fall</u> YOY
2.5	2		3			
3.0	1		1	3	YOY	YOY
3.5			1	2	YOY	YOY
4.0				6		YOY
4.5				4		YOY
5.0				7		YOY
5.5				9		YOY
6.0	1		1	2	1	YOY
6.5			1		1	
7.0			1	1	1	1
7.5			2	5	2	1
8.0			1	3	2	1
8.5		1	3	4	2	1
9.0		1	5	1	2	1
9.5		2	1	4	2	1,2
10.0		2		4		1,2
10.5		1		4		1,2
11.0		3	1	3	2	1,2
11.5	1		1	4	2,3	2
12.0				3		2
12.5			1	1	3	2
13.0			1		4	
13.5			1	1	4	3
14.0				1		3
14.5			1	1	4	4
15.0						
15.5		1				5
16.0				2		4,5
16.5		1		1		5
17.0	1				5	
TOTAL	6	12	26	76		

compared to 7.2% in 2001. Round-bodied suckers are intolerant of habitat and water quality degradation. This group of fish appears to have been hit very hard in the Lake Indy area during the winter 1999-2000 fish kill.

Largemouth bass was the most abundant game fish species collected at Lake Indy. Twenty-five largemouth were collected that ranged from 2.5 to 14.6 inches long. Over half of the bass sampled were from 6 to 9 inches long. Thirteen channel catfish were collected from 9.9 to 24.2 inches in length and averaged 16.2 inches. Ten flathead catfish that ranged in length from 10.2 to 34.0 inches were collected. Flathead catfish stockings had occurred in the late spring of 2001 in Lake Indy. Six of the ten flatheads collected in the present survey were well outside of the range of the size of stocked fish. Other popular game fish sampled included



eight rock bass from 3.9 to 8.8 inches long and two smallmouth bass that measured 4.8 and 8.9 inches long.

EA Engineering collected 25 different species with electrofishing gear from 1992 to 1995 from the Stout pool, however, the average number of species collected in a single year was 19. For all years combined, the dominant species collected by number were gizzard shad (19.3%), longear sunfish (17.0%), bluegill (16.8%), and largemouth bass (12.7%).

Only fish collected with electrofishing gear were used in the following analysis. By using only electrofishing data, the following is comparable to the EA Engineering data. In the 1998 fish community survey conducted by DFW at Stout, the most abundant species collected were shad (30.4%), longear sunfish (15.2%), and spotted sucker (11.7%). Sixteen species were collected with electrofishing gear in 1998 which is down from the 1992 to 1995 average. At the Stout pool in the July survey in 2001, 26 species were found. The most abundant species collected by electrofishing in 2001 were longear sunfish (46.5%) and bluegill (14.6%).

In 1998, the dominant species collected with electrofishing gear at Lake Indy were bluegill (17.7%), longear sunfish (15.5%), largemouth bass (13.3%), spotted sucker (10.2%), silver redhorse (9.5%), and shad (8.5%). Eighteen species were collected by electrofishing gear in 1998. The dominant species collected by electrofishing in 2001 were longear sunfish (35.2%), bluegill (19.2%), and largemouth bass (11.7%). Twenty species were collected in July of 2001.

Species considered to be tolerant to a wide variety of environmental disturbances including water quality and habitat degradation averaged 39% of the Stout pool fish community for the 1992 to 1995 EA Engineering surveys. In 1998, 48% of the Stout pool sample and 21% of the Lake Indy collection were tolerant species. In 2001, tolerant species comprised 21% of the fishery at Stout and 23% at Lake Indy. The main reason for the considerable drop in the percent of tolerant species at Stout was due to the near absence of shad in the July 2001 survey.

Species collected from the two stations considered to be sensitive to environmental disturbance include the redhorses, brook silverside, longear sunfish, smallmouth bass, and logperch. From 1992 to 1995 at Stout, 16% to 23% were sensitive species with the average of all samples being 20% sensitive species. At the Stout pool, sensitive species comprised 22% and 52% in 1998 and 2001 respectively. The dramatic jump in sensitive species at Stout in the present survey was due to the increased collection of longear sunfish. The proportion of sensitive species remained fairly stable at Lake Indy as 31% were sensitive species in 1998 and 38% in 2001. Lake Indy, however, had a considerable drop in redhorse number collected in 2001 compared to 1998.

Prior to the 1994 fish kill near BWWTP, the bass fishery appeared to be very similar to the Lake Indy bass population. From 1992 to 1995, black bass comprised 16% of the fish community at the Stout pool. Largemouth bass was, by far, the dominant black bass species. Black bass comprised 14% of the fishery at Lake Indy in 1998 and 13% in 2001. Largemouth accounted for 94% of the black bass collected at Lake Indy in those two years. Since the 1994 fish kill, black bass at Stout have comprised just 5.8% and 5.2% of the fish community in 1998 and 2001 respectively.

## FALL GAME FISH SAMPLING

Just twelve largemouth bass were collected from the Stout pool station in the fall of 2001. The average catch rate of largemouth for the six years of sampling in the fall was 10.3 per year (Table 5). Largemouth collected from the Stout pool in the fall sample ranged from 8.7 to 16.6 inches long. Two of the largemouth were larger than 12 inches.

Table 5. Comparison of game fish collections at the Stout pool and Lake Indy during fall collections from 1996 through 2001 (1 hour of D.C. electrofishing at each site per year).

	Stout Pool							Lake Indy						
	1996	1997	1998	1999	2000	2001	Avg.	1996	1997	1998	1999	2000	2001	Avg.
Largemouth bass	21	13	6	1	9	12	10.3	89	97	34	83	61	76	73.3
Channel catfish	2	2	3	0	0	1	1.3	5	2	0	1	3	1	2.0
Smallmouth bass	0	1	1	0	0	2	0.7	0	1	1	4	2	4	2.0
Spotted bass	0	3	2	0	2	3	1.7	0	0	0	0	0	0	0.0
Flathead catfish	0	0	0	0	0	0	0.0	0	0	1	0	0	0	0.2

The October 2001 largemouth bass sample at Lake Indy compared favorably to the previous years of sampling. Seventy-six largemouth were collected in the fall of 2001 while the overall six year average was 73.3. Largemouth bass collected in the fall of 2001 ranged in length from 2.8 to 16.4 inches and averaged 8.0 inches. Ten of the largemouth were 12 inches or larger.

One channel catfish was collected from both the Stout pool and Lake Indy in the fall of 2001. The average over the six year period was just 1.3 per year at Stout and 2.0 per year at Lake Indy. Since catfish are generally ineffectively sampled with electrofishing gear, the low number sampled over the years is not surprising. In the 2001 summer survey, 86% of the channel catfish sampled were collected with gill nets.

Smallmouth bass were infrequently found in the Stout pool during the six years of sampling as they were found in just three of the six fall samples. Smallmouth capture rate was just 0.7 per fall sample. Two smallmouth bass were collected in the fall of 2001 at Stout that measured 6.4 and 6.5 inches long. Smallmouth were captured in five of the six fall samples at Lake Indy at the rate of 2.0 per year. Four smallmouth were collected in October of 2001 at Lake Indy that ranged from 3.7 to 7.6 inches long.

In the six years of sampling at the two pooled locations on White River, spotted bass have regularly been collected at Stout, but in low numbers (average 1.7 per year), while none have ever been collected at Lake Indy. Three spotted bass from 9.6 to 10.5 inches long were collected at the Stout pool in October of 2001.

No flathead catfish were collected at either location in the fall of 2001. In fact, no flathead have ever been collected during any of the summer or fall surveys at Stout during the six year project. Only one flathead catfish has ever been collected at Lake Indy during the history of fall sampling. However, a total of twelve have been collected from Lake Indy when all of the summer and fall surveys are combined; ten of which were sampled in the 2001 summer survey. A few of the flatheads collected at Lake Indy in July of 2001 could have been from the stocking that occurred a month earlier.

Growth of largemouth bass is very similar for the fish collected at the two locations surveyed (Table 6). However, due to the low numbers of largemouth sampled from the Stout pool, the growth data presented for that location is not very reliable. Largemouth are reaching the 12 inch minimum size limit at around 3 years of age. The best year classes of largemouth bass found in the Stout pool were produced in 2000 and 1999, however, they are weak in comparison to the abundance of largemouth found from those same year classes in Lake Indy. In 2001, three young-of-year (YOY) largemouth were found at Stout in the summer survey but none were sampled in the fall. At Lake Indy, five of the 26 largemouth bass collected were YOY during the summer survey and 33 of the 76 collected in the fall were YOY.

## CONCLUSIONS

Very few conclusions can be made as to how the fish community has changed over the years at the Stout pool. Although the fish kill in the winter of 1999-2000 originated far upstream of both the Stout pool and Lake Indy, it affected the fish communities in each of the sampled areas; Lake Indy much more so than the Stout pool. The populations of many species of fish were injured in Lake Indy while virtually only gizzard shad were affected in the Stout pool. The fact is, however, seven more species were collected at Stout in 2001 (27 total) compared to 1998 (20 total). A total of 25 species was found in three years of sampling by EA Engineering.

Table 6. Back calculated lengths of largemouth bass (Y-intercept = 0.8 inches) collected from the Stout pool and Lake Indy in 2001.

	Year Class	Number	Age				
			<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Stout Pool	2000	5	4.5				
	1999	6	4.2	7.7			
	1998	1 *	5.8	8.8	10.7		
	1997	0					
	1996	3	5.5	10.0	12.5	14.2	15.7
		Average (Number)	4.7 14	8.8 9	12.5 3	14.2 3	15.7 3
Lake Indy	2000	23	4.7				
	1999	27	5.2	7.6			
	1998	3	3.7	9.7	11.5		
	1997	5	5.0	7.6	11.9	13.5	
	1996	2 *	5.7	9.5	12.3	14.6	15.9
		Average (Number)	4.6 58	8.3 35	11.7 8	13.5 5	

\* Not included in average calculations

Six of the species collected at Stout in 2001 were never encountered by EA Engineering, while four species that EA Engineering had found were not sampled by DFW. The additional species that were collected by DFW but not by EA Engineering and vice versa were in such low abundance (one or two individuals sampled), that these species could easily be missed during any sampling event. Another fact is that the proportion of tolerant species collected in 2001 was down at the Stout pool compared to 1998. This was primarily due to the marked drop in shad abundance as a result of the 1999-2000 fish kill. Shad populations usually increase rapidly, so the low level of tolerant species will probably be short lived. One encouragement is the jump in the longear sunfish population at Stout. Longear are sensitive to habitat degradation and poor water quality, so their increase could indicate some improvements in environmental conditions recently.

There is conclusive evidence that the nearly 22,000 largemouth bass and 16,400 smallmouth bass stocked by DFW from 1994 to 1999 in the Stout pool were not successful at reestablishing a decent bass fishery. Smallmouth were collected during five of the six fall samples at Lake Indy and just half of the Stout pool samples. At both reaches they were in very low abundance and those sampled were small individuals. It is not surprising that smallmouth bass were not successful since they do not prefer impounded areas with little flow and silty substrate. Due to the poor habitat, it is unlikely that either reach will ever support large

populations of smallmouth. Despite four years of stocking, the largemouth bass population could not be improved in the Stout pool. Largemouth bass catch rates over the six year period of fall sampling averaged seven times higher at Lake Indy compared to Stout. Actually, the best largemouth bass catch at the Stout pool occurred in 1996 before the first largemouth stocking was made. Unlike smallmouth bass, there is desirable habitat for largemouth bass. Largemouth maintain a desirable population in Lake Indy, so there was hope that a similar population could be rebuilt at Stout through stocking since the two reaches have similar habitat.

Channel catfish is a species that is tolerant of poor water quality and habitat degradation. The only stocked species that seems to have done well in the Stout pool is channel catfish. In both 1998 and 2001, the gill net catch of channels was twice as high at Stout compared to Lake Indy. The evenly distributed sizes of channel catfish observed in those surveys indicate that either fish from nearly all of the stockings survived or natural reproduction is always successful.

Both habitat quality and water quality are likely responsible for the lack of success of smallmouth stockings. However, since it appears that largemouth habitat is adequate near BWWTTP, it is likely that water quality is the primary factor which is limiting the establishment of a dense largemouth bass population. Chronic water quality problems exist in this portion of White River as a result of the combined sewers spilling untreated waste water into the river following heavy rains. Also, many times a year following heavy precipitation, BWWTTP is forced to release raw and partially treated sewage into the river since the combined sewers bring unnecessary amounts of water into the treatment plant which the plant cannot handle.

The primary reason for the higher quality bass fishery in Lake Indy is because there are only eight combined sewer overflow outlets that empty into the river upstream of the Lake Indy dam (Camp, Dresser, & McKee, Inc. 2001). There are approximately 131 combined sewer overflows that are found upstream of the Stout dam. These combined sewers empty not just into White River, but also into Eagle Creek, Pleasant Run, Pogues Run, and Fall Creek. When combined sewers overflow, the untreated waste causes depressed dissolved oxygen levels, which at times is so dramatic that fish kills are triggered. Streams with combined sewer overflows usually have high bacteria levels, and they contain impaired biotic communities.

It is highly unlikely that the fish community and black bass populations will ever improve in the Stout pool until the combined sewers are either eliminated or the frequency of their releases is dramatically reduced. The City of Indianapolis has developed a plan to address water quality issues in the city. The Camp, Dresser, & McKee, Inc. report stated that combined sewer overflows are the single largest pollution contributor to the rivers and streams of Marion

County. It is estimated that on average there are 60 overflow events per year. Other sources responsible for water quality violations in Marion County include urban storm water, leaching septic systems, and upstream pollution sources. Since the combined sewer system is largely responsible for degraded water quality and depressed biotic communities in the rivers and streams in the city, the City of Indianapolis' plan primarily focuses on reducing the frequency of combined sewer overflows including providing sewage storage areas and some sewer separation. The ideal solution would be to totally revamp the antiquated combined sewer system and completely separate storm water drainage from the sanitary sewers. However, if the city's plan is implemented, it should result in some improvements in the water quality of White River and its Marion County tributaries.

Anglers are reminded that there is a 12 inch minimum size limit and five fish bag limit in effect for black bass. Anglers, however are encouraged to practice catch and release for all sizes of bass to maintain or increase the numbers of spawning individuals. A 10 inch minimum size limit is in place for catfish found in rivers and streams. Although the Stout pool and Lake Indy are both impoundments on the West Fork of White River, all stream fishing regulations apply rather than lake regulations.

#### LITERATURE CITED

- Camp, Dresser, & McKee, Inc. 2001. Combined Sewer Overflow Long Term Control Plan and Water Quality Improvement Report. Indianapolis. 17pp.
- EA Engineering, Science, and Technology. 1995. Evaluation of Fish and Macroinvertebrate Communities of the West Fork of the White River near Indianapolis, IN, 1992-1995. Deerfield, IL. 99pp.
- Keller, D.C. 1999. Evaluation of the Fish Community in a Portion of the West Fork of White River, 1998 Interim Fish Management Report. Division of Fish and Wildlife. Indianapolis. 12pp.

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